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Report

OF THE

Botanical Survey of India

FOR

1952-53.

PRINTED AT THE AGRA UNIVERSITY PRESS, AGRA.

ANNUAL REPORT OF THE BOTANICAL SURVEY OF INDIA, SYSTEMATIC DIVISION FOR THE YEAR 1952-1953.

The duties of the Director, Botanical Survey of India at the Herbarium were discharged by Dr. K. Biswas, Superintendent, Indian Botanic Garden, Calcutta. Shri R. Seshagiri Rao, Systematic Assistant remained on duty throughout the year under report upto the 28th of March 1953 when he went on leave for two months. Usual supervision work of the Systematic Division was carried out by the Superintendent.

Two botanical tours were conducted by the Superintendent, one to Richi-La on the border of Bhutan and Sikkim and other to different parts of Sikkim, E. Himalaya and several interesting plant specimens were collected. During the period, he inspected the Cinchona Plantations at Rongo in connection with the proposed cultivation of medicinal plants at Rongo under the auspices of the Indian Council of Agricultural Research and the Medicinal Plants Committee of the Government of West Bengal.

Several research workers from various educational and research institutions such as the Geological Survey of India, Calcutta, the Presidency College, Calcutta, Govt. College, Darjeeling, Forest Research Institute, Dehra Dun, Pharmacognocy Laboratory, Calcutta, Bose Research Institute, Calcutta, Central Inland Fisheries, Barrackpore, Ram Bagh Garden, Amritsar, the Delhi University, Royal Forest Department, Bangkok, Thailand, and many others worked in the herbarium for different periods.

Among the visitors to the Herbarium and the Gardens may be mentioned Dr. Rajendra Prasad, President of the Indian Union, Sri Hem Chandra Naskar, Minister, Forest and Fisheries Dept., Government of West Bengal and several other distinguished personalities who accompanied the President, Dr. and Mrs. Grilley. Secretary-General for Agriculture, Brazil, Prof. F. Leza of Havana university, Prof. Isahura Nagai, College of Agriculture, Tokyo, Dr. O. J. Eigsti of Illinois University, Prof. Zamoste-Kin and the party of Soviet artists, Dr. A. Monder, Agricultural Research Officer, Rehovot, Israil, Members of the Swiss Expeditionary party to Mt. Everest and of the Japanese Expeditionary party to the Himalayas and several other scientists from various parts of the world.

The routine work of mounting, repairing, incorporating, replacing the genus and species covers and numbering of the Herbarium sheets, identification and loan of specimens for various institutions in India and abroad continued (vide Appendix I). 1313 specimens of Central European plants were received from Prof. C. Bachni ; Director, Conservatoire et Jardin,

Botanique ; Geneva for the Herbarium and 342 specimens of Indian plants were presented from the Herbarium to various institutions.

Information on both scientific and economic aspects, relating to the vegetable resources of India was supplied to various research workers and industrialists in India and abroad in reply to their queries. It includes notes on nomenclature, migration, distribution, descriptions, systematic position, cultivation, eradication of undesirable weeds and other allied subjects (Vide Appendix II). In addition to these, several plant materials and drawings for research, demonstration, Laboratory work, examination, Museums and Exhibition purposes were also supplied to many correspondents in and outside India (Vide Appendix III).

Studies on "Indo-Malayan species of *Viscum*", and "Vegetation of Rampa and Gudem agency of the Eastern Ghats with the Systematic enumeration of the species" were carried out by the Systematic Assistant.

Investigation of medicinal plants of the Sikkim State has received considerable attention of the Superintendent as desired by the Prime Minister. Researches on this subject are being carried out from two aspects of the subject. First in the Sikkim State the Superintendent collected all available information on the spot in co-operation with Mr. J. S. Lall, I. C. S., Dewan of Sikkim State. A small brochure is under preparation by the Superintendent containing all available information. Secondly collection of indigenous medicinal plants is also being carried out with the help of the surveyor-General whose staff has been instructed to collect plants while moving about the different parts of the country as suggested by Sri K. D. Malavya, our Deputy Minister. Materials so far collected are, however, not of sufficient value as collection by untrained persons does not serve the purpose of science.

Work on Indian Roses in continuation of the last year's report is being carried out by Mr. V. Narayanaswami, Research Assistant, Council of Scientific and Industrial Research under the direction of the Superintendent.

The Superintendent took part in the discussion on the schemes on indigenous drugs used in veterinary practice collected from ancient manuscripts of northern India and also in the deliberations of the inaugural meeting of the Central Board for Wild Life at Mysore and read the paper on "Role of Vegetation in the Preservation of Wild Life." He also delivered his Presidential Address at the Annual Meeting of the Indian Botanical Society as President of the Society attending the meeting of the Indian Science Congress Association as representative of Govt. of West Bengal and other scientific bodies.

Popular lectures such as the radio talk in Bengali on "the tree is the beautiful embodiment of perennial pleasure" during Vanamahotsava, on "the vegetation of Jalap La, the gate way of Tibet" at the Annual meeting of the Himalayan Club and "on the vegetation of the Eastern Himalaya" illustrated with lantern slides and technicoloured film at Mahendra Lal Sircar's memorial lecture at the Indian Association for the Cultivation of Science were also given by the Superintendent.

The Superintendent was awarded Paul Bruhl Memorial Medal in recognition of his researches with special reference to India and Asia in general.

The following articles were published during the year :—

(1) "National Garden of India" by the Superintendent. Amrita Bazar Patrika-Puja Number.

(2) "Two notes on *Abutilon indicum* G. Don—the Leucoderma plant" by the Superintendent-Amrita Bazar Patrika, 4th Sept. & 12th Nov. 1952.

(3) "Cultivation of the medicinal plants in Bengal and Andaman Island"—a comment by the Superintendent-Indian Pharmacist, July, 1952.

(4) "The temple of flower is in bloom for ever" by the Superintendent-West Bengal Weekly, 12th March, 1953.

(5) "Comparative Pharmacognostic studies of *Datura fastuosa* and *Datura fastuosa* var. *alba*" by the Systematic Assistant-Indian Pharmacist, July 1952.

The following papers have been sent for publication and they are passing through the press :—

1. "Hand-Book of Common Water and Marsh Plants of India and Burma" (2nd Edition) by the Superintendent-Govt. of India Press.

2. "Rajputana Desert vegetation" by the Superintendent and the Systematic Assistant-Proc. of the National Instt. of Science of India.

3. "Occurence of Paragrewia Gangnep. in India and Burma" by the Systematic Assistant-Journal of Bombay Natural History Society.

4. "Revision of Indo-Malayan species of *Chonemorpha* G. Don by the Systematic Assistant-Journal of the Indian Botanical Society.

Summaries of 19 scientific papers were prepared and sent by the Systematic Assistant to the Editor, Biological Abstract on request for publication in that Journal. Nearly 250 papers and notes on different branches of Indian Botany were published during the year in various Indian and foreign journals. 23 Indian species new to science have been published (vide appendix III).

12 copies of the Records of the Botanical Survey of India and 28 copies of Duthies Flora of the Upper Gangetic Plain were sold out occruing a total revenue of Rs. 70-8-6.

The revised budget estimate for the Systematic Division of the Botanical Survey of India for the year 1952-1953 was Rs. 34,272 of which Rs. 33,340 was spent.

Sd/- K. Biswas,
Superintendent,
Indian Botanic Garden, Calcutta.

APPENDIX I.

Salient activities connected with the Herbarium, Indian Botanic Garden, Calcutta.

1.	No. of specimens mounted in the Herbarium			...	3975
2.	No. of specimens repaired in the Herbarium			...	7435
3.	No. of specimens incorporated in the Herbarium			...	337
4.	No. of Genus covers replaced	,,	,,	...	23
5.	No. of species covers replaced	,,	,,	...	165
6.	No. of specimens numbered	,,	,,	...	34,495
7.	No. of specimens identified	,,	,,	...	3908
8.	No. of specimens sent on loan to different research workers.	,,	,,	...	1006
9.	No. of specimens returned from loan (including those taken during the previous year)	,,	,,	...	516

APPENDIX II

Notes on Nomenclature and distribution of :—

Equisetum, Olea, Linociera, Memecylon, Trapa, Aegopodium, Indigofera, Fumaria, Salvinia, Elaeocarpus, Erodium, Gelidium, Ludwegia, Jussieua, Fibraurea, Argyreia, Urginea, Scilla, Lillium, Notholiriom, Asplenium, Hydnocarpus, Iris, Marsilea, Pedicularis, Pyrus, Rumex, Salvia, Thymus, Chondrus, Fucus, Aspidium, Calamintha, Drymoglossum, Erythraea, Jambosa, Cydonia, Statice, Cuscuta and *Flacourtea.*

Descriptions of :—

Dryopteris, Pachira.

Notes on systematic position of :—

Thespesia.

Notes on cultivation of :—

Sand-binding plants along canal banks, *Ceratonia, Euphorbia,* sweet potato, *Trapa* in Mysore and surroundings.

Notes on eradication of :—

Aquatic weeds in irrigation canals, *Saccharum spontaneum.*

Notes on miscellaneous subjects such as :—

Authenticity of type sheets of two species of *Staurogyne* ; Polyembryony of *Syzygium*, *Melia* ; varriegated leaves of *Mimusops* ; botanical and Hindi names of Indian fruits and their families and affinity to fruits of other parts of the world ; Press cuttings entitled "Evolution of Plant Life" and "Plant Life in the Himalayas" ; Scheme of the Preparation of the Flora of Delhi State ; Symposium on the "Teaching of Science"; Objects of research by the Botanical Survey of India at the High Altitude Station ; Standardisation of quality of Ginger grass oil and Palmarosa oil ; 55 species of plants selected for the Chelsea Coronation Show.

Material supplied :—

Coloured paintings: —

16 plates of Himalayan plants to the Indian Exhibition, Oslo. 12 plates of Ornamental and Medicinal plants of India to the Railway Centenary Exhibition, Delhi.

Fixed materials of flowers, fruits, seeds and other parts of :—

Elaeocarpus, Pachira, Barringtonia, Litsaea, Napoleona, Careya, Adansonia, Abroma, Stephania, Homalium, Vatica, Naronhia, Peperomia, Piper, Cola, Microcos, Grewia species, *Strychnos, Cinnamomum Viola,* and *Jasminum* to research workers in India and abroad.

Herbarium sheets :—

Salvinia, Carex, Abroma and several medicinal and East Himalayan plants to various Institutes and research workers.

APPENDIX III

List of New Indian species published.

Trichosanthes tomentosa Chakravarty.
T. listeri Chakravarty.
Neoluffa sikkimensis Chakr.
(**Neoluffa** Chakr. nov. gen.)
Cucumis hystrix Chakr.
C. muriculatus Chakr.
Melothria assamica Chakr.
M. ritchiei Chakr.
M. angulata Chakr.
Schizopepon wardii Chakr.

Rhododendron cowanianum Davidian.
R. lowndessi Davidian.
Syperus alulatus Kern.
Apocopis peguensis Bor.
Poa asperifolia Bor.
P. sikkimensis Bor.
(=P. annua Linn. var.
sikkimensis Stapf. F. B. I.)
Abelmoschus tuberculatus Pal et Singh.
Gaultheria stapfiana Airy Shaw.
Poa polyneuron Bor.
Medusandra richardsiana Brenan.
—British Camaroons (W. trop. Africa),
Medusandraceae, Medusandrales—
new family and new order.
Haplothismia exannulata Airy Shaw.
Fritillaria bhutanica Turrill.
Gyrophoropsis dwaliensis Rasanen veli and several other new Lichens.
Isonandra zeylanica Jeuken.
I. alloneura Jeuken.

INDUSTRIAL SECTION, INDIAN MUSEUM,

Botanical Survey of India.

Annual Report for the year 1952-53.

The post of the Director, Botanical Survey of India, being held in abeyance, his duties in so far as it concerned the Industrial Section and the Survey except the Systematic Division, were carried out by the Curator. The Curator served also as an ex-officio Trustee and as the Honorary Secretary to the Trustees, Indian Museum. He was on earned leave for 20 days from the 7th July to 27th July, 1952, when his office was looked after by Dr. S. L. Hora, Director, Zoological Survey of India.

Two tours were undertaken by the Curator with some of his assistants. One was to Mysore State Forests in the Western Ghat Ranges (between 7th May 1952 and 15th June 1952) and the other to Andaman and Nicobar Islands (from 4th Feb. 1953 to 8th March, 1953). The tours resulted in a large and very valuable collection of specimens, typical of tropical rain-forests, moist evergreen forests, dry deciduous forests and sea-weeds of littoral and sub-littoral belts. The collections included also several economic plants and plant products.

The Industrial Section, Indian Museum, Calcutta, received the usual care and attention. More than 28,150 specimens in the Exhibition galleries were treated and redisplayed, and 6,215 labels for the exhibits were renewed, indicating about 10% increase over the previous year in the former and 50% increase in the latter. About 1,570 labels were also prepared afresh. To facilitate easy reference of exhibits, index numbers and catch labels were also written on the numerous show-cases in the public galleries In addition, the numerous specimens in the reserve and study collections were also attended to, and over 720 fluid collections were refilled with proper preservatives.

Reorientation of nearly 50% of the exhibits in the galleries was also done to afford better sequence. Nearly 545 exhibits in the Timber Bay were re-grouped according to their economic uses, as employed for agricultural purposes, ship-building, housing and other construction, in pencil and match industries, and so forth.

Two new show-cases were designed and made to order at a total cost

of Rs 5,234/- met from the departmental budget. 500 label-holders were also made at a cost of Rs. 1046-12-0 met from the Post-War Trust Fund, made available by the Trustees of the Indian Museum.

Consistent with the economic policy, the general acquisition to the Museum had to be moderate and selective. Among the noteworthy accessions may be mentioned of a series of models depicting "Coir Industry" in various stages, prepared at a cost of Rs. 1,230/- met from the Trustees funds. Miniature models of different types of musical instruments and fancy articles made of Walnut from Kashmir were purchased and exhibited. 35 coloured lantern slides of "Economic Fungi" and 40 water-colour paintings of economic plants were prepared and added to the previous collections. Photographs taken while on tour, and one photograph of a seedling of "Milk-tree' raised at our instance by the Superintendent, Lalbagh Gardens, Bangalore, at his gardens, were also incorporated in our records. The several other acquisitions included, as usual, crude drugs and medicinal plants, fibres and fibre yielding plants, oils and oil-seeds, including essential oils, dye-yielding materials, economic timbers from Andaman Islands, papier machie articles and miniature articles made of sandal wood, Red sanders, Rose wood, Ebony, Walnut and other wood carvings.

A super-fine quality of "Tinnevelly mat" made of *Cyperus-corymbosus*, with the name "Indian Museum, Calcutta" woven in silk, was also acquired for the Museum. This specimen is an exquisite example of manifestation of dexterity in this cottage industry, in Tinnevelly in South India.

The Curator rendered necessary help to institutions in India and abroad in connection with exhibits arranged by them. The foreign countries to which selected exhibits were sent were Oslo (Norway) and the Hague.

Twelve specially made picture-frames from different kinds of wood, together with colour portraits of the plants, the wood of which was used for the frames, and mounted in their respective frames, were presented to the Ministry of Food & Agriculture (Agri.) at the suggestion of the Deputy Secretary to the Government of India.

Parties of students from Forest Colloge, Dehra Dun (25), University College of Science, Calcutta (2), All Bengal Women's Home (Orphanage), Calcutta (27) and St. Thomas Primary School, Calcutta (30) paid educational visits on different dates. Among the distinguished visitors may be mentioned Hon'ble Deputy Minister, Natural Resources and Scientific Research, Shri K. D. Malavayya ; members of the Re-organisation Committe, Government of India and the Visiting Committee appointed by the Trustees. The latter committees have emphasised the need for expansion of the Industrial Section.

Two popular lectures were arranged by the Curator in the "Museum Popular Lecture" series. One was delivered by Dr. J. C. Sen Gupta of the Presidency College, Calcutta on soil-less culture of plants (Hydroponics) and the other by Dr. E. K. Janaki Ammal, Officer-on-Special Duty, Botanical Survey of India of Mechanism of the evolution of cultivated plants. Earlier the Curator also delivered one lecture on Fungi and some aspects of their economic importance.

The number of enquiries dealt with during the year was, as usual, varied and large and included those on source of supply of economic plants and plant products, suitable areas for cultivation of economic plants, lists of medicinal and perfume yielding plants found in commercial scale in India, vernacular names of economic plants and their geographical distribution, miscellaneous information on useful plants in India etc. Requests for identification and supply of materials were also large and they were promptly attended to.

The reorganisation of the Library attached to the Industrial Section was continued. Over 1,020 publications were added, 1,826 were reaccessioned, 888 were loaned and for 574 index cards were prepared. The following journals were subscribed new, viz. Phytomorphology ; Proceedings of the Indian Academy of Sciences ; Bulletin, Torrey Botanical Club and Bulletin of Miscellaneous information, Kew. Over 1,200 ledgers containing valuable information on Economic Botany were properly arranged. Annual stock verification of the library was done by the Curator and the catalogue of the collections prepared was checked and revised and got ready for the Press. Usual facilities were provided for officers of Government departments and non-officials to consult the Library. Two specially designed book-cases were made at a total cost of Rs. 2,080/- met from the departmental budget.

In the Industrial Section Herbarium during the year, about 4,100 herbarium sheets were mounted, 3,320 new specimens were collected and incorporated, 2,677 sheets were treated and about 2,100 specimens labelled. The general trend of activity showed an appreciable increase over the previous year. Four steel cabinets were purchased at a total cost of Rs. 1,005/-. This would now greatly facilitate arranging properly the more recent tour collections according to genera and regional distribution so necessary for ecological studies.

The Curator completed a preliminary study of the Sargassums of Indian territorial waters. This revealed that at least 80 species and varieties are to be looked for from this region. Geographical distribution of the species and varieties were also studied and mapped. He also completed his study on *Rosenvingea intricata*, which is a new record for Chilka lake in India. He also discovered from the same locality an endophyte and an interesting

Diatom, *Biddulphia Tuomeyii*, which again are new records for India. These plants are being further investigated. The Curator made a first hand on-the-spot study and survey of the "Korai-mat Industry of Tinnevelly". Valuable information has been collected for a brochure on this reputed industry of the district. A short guide to the Industrial Section Galleries of the Indian Museum was also published by the Curator.

Small samples of viable seeds of Brazilian wax-palm (*Copernicia cerifera* Mert.) and Cork oak (*Quercus süber*) procured from abroad were distributed to various centres for experimental trial for the introduction of these useful plants. Arrangements were also made for chemical investigation of roots of *Rauwolfia perakensis* from Kaula Lampur and an underground part of a monocot procured from Calcutta. The analysis of the latter showed that the specimen contained in fresh tissue-Moisture 70·5% ; Non-reducing sugars 2·53% ; Reducing sugars 1·6% ; Yeast+ve ; Vitamin C++++; Vitamin A B D E nil and in dried tissue Ash 5·706% ; Fat 2·067% ; Inorganic N. 0·0726% and Proteinous No. 0·7297%. It is inferred that the specimen seems to be a good food. Further work is comtemplated on this.

Three staff meeting were conveyed on 29-3-1952, 2-8-1952 and 30-8-1952 respectively. At the instance of Government of India, office accommodation was provided in the Indian Museum premises for Dr. E. K. Janaki Ammal, who was appointed as Officer-on-Special Duty, Botanical Survey of India, with effect from the 14th October 1952 for 1 year.

The total budget grant for the Industrial Section, Indian Museum for the year 1952-53 was Rs. 88,500/-. Out of this a sum of Rs. 81,634/- was spent.

The Trustees of the Indian Museum also very generously placed at the Curator's disposal a sum of Rs. 9,200/- for restoration work. Out of this, a sum of Rs. 2,776/- only was utilised during the year under report.

Sd/- K. S. Srinivasan,
Curator,
Industrial Section, Indian Museum.